## Low Power EMI Reduction IC

Features

- **FCC approved method of EMI attenuation.**
- **Provides up to 15dB EMI reduction.**
- **Generates a 4X REF EMI spread output**
- **Spectrum clock of the input frequency.**
- **Optimized for input frequency range from 10 to 20MHz.**
- **Internal Loop Filter minimizes external components and PC board space.**
- **Down Spread of 1.75%**
- **Very Low Cycle-to-Cycle Jitter.**
- **3.3V operating Range**
- **CMOS / TTL compatible inputs and outputs**
- **Available in 8-pin SOIC and 8-pin TSSOP packages.**
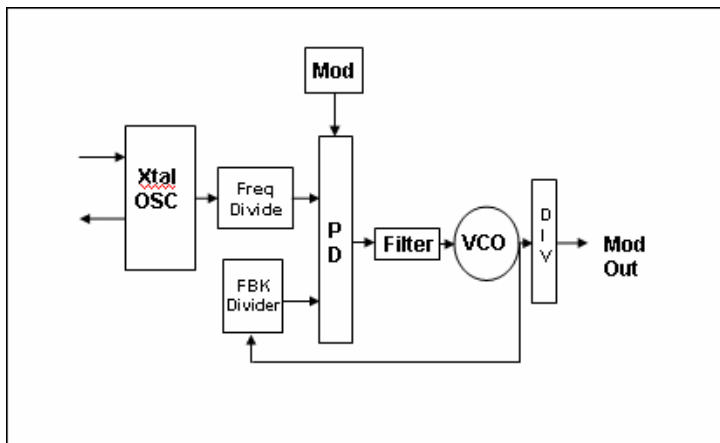
Product Description

The ASM3P2108 device is a versatile spread spectrum Frequency Synthesizer / Modulator designed specifically for a wide Range of input clock frequencies from 10MHZ to 20MHz with a 4X multiplier for output clock frequencies from 40MHz to 80 MHZ.
The ASM3P2108A generates an EMI reduced clock signal from a crystal, ceramic resonator, or system clock. The ASM3P2108A generates a Down Spread of -1.75% deviation from Center Frequency using a nonlinear modulation profile.

The ASM3P2108A reduces Electro Magnetic Interference (EMI), at the Clock Source, allowing system wide reduction of EMI on downstream clock and data dependant signals.

The resulting EMI reduction provides for significant cost savings by reducing the number of circuit board layers and shielding that are traditionally associated with designs in order to achieve EMI regulatory compliance.

The ASM3P2108A modulates the output of a single PLL in order to "spread" the bandwidth of a synthesized clock, thereby decreasing the Peak Amplitudes of its associated harmonics. This results in significantly lower radiated EMI compared to the narrow band signal produced by standard oscillators and most clock synthesizers & generators. This technique of lowering EMI by increasing the signals bandwidth is called Spread Spectrum Clocking (SSC). The ASM3P2108A utilizes the most efficient and optimized modulation profile approved by the FCC, and is implemented using a proprietary, All-Digital Method.

Applications

The ASM3P2108A is targeted towards the Consumer and PC/Data Processing, or Computation markets. Entertainment devices, LCD displays, Notebook computers, PC peripheral devices, embedded systems, PDA's, and hand held devices provide a platform to take full advantage of the feature set of the ASM3P2108A.

Pin Configuration

XIN / CLK IN — □

VSS — □

N/C — □

N/C — □

ASM3P2108A

□ — XOUT

□ — VDD

□ — N/C

□ — ModOut / SSC
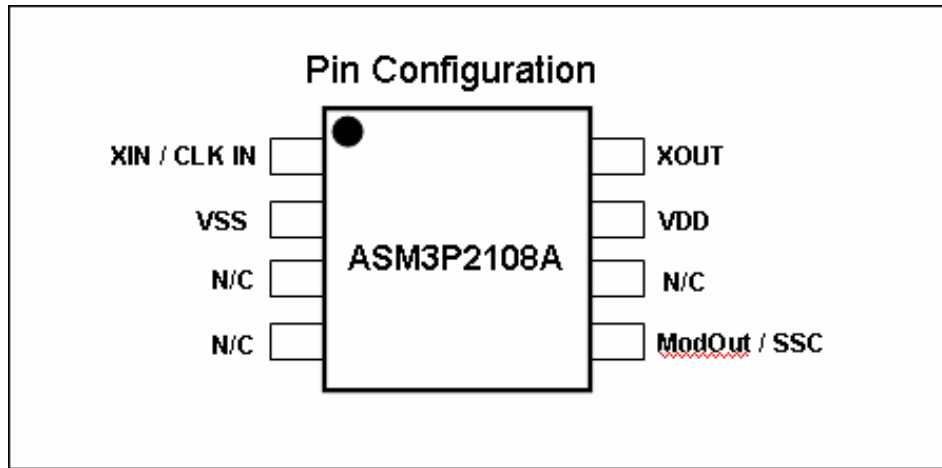
Pin Description

Pin #	Pin Name	Pin Type	Description
1	XIN / CLKIN	Input	Crystal Connection or external frequency input. This pin has dual functions - it may be connected to an external XTAL or driven by an external LVCMOS REF clock.
2	VSS	Power	Power Supply - 3.3V -
3	N/C	No Connect	no connection
4	N/C	No Connect	no connection
5	ModOut / SSC	Output	Spread Spectrum Clock Signal Output
6	N/C	No Connect	no connection
7	VDD	Power	Ground / Return
8	XOUT	Input	Crystal connection. If using an external REFerence, this pin MUST be left open

Spread Spectrum Clock	
-1.75% Down Spread	Non linear modulation profile

Notice: The information in this document is subject to change without notice.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
VDD, Vin	Voltage on any pin with respect to ground	-0.5 to 7.0	Volts
TSTG	Storage Temperature	-65 to + 125	Degrees C
TA	OperatingTemperature	0 to 70	Degrees C

Note: These are Stress ratings Only, and functional operation is not implied. Exposure to absolute maximum ratings for extended periods may affect device reliability...

DC Electrical Characteristics   (VDD= 3.3V Temp - 25 degrees C)

Symbol	Parameter	Min	Typ	Max	Units
VIL	Input Low Voltage	VSS - 0.3V	-	0.8	V
VIH	Input High Voltage	-	-	VDD + 0.3	V
IIL	Input Low Current	-60.0	-	-20.0	µA
IIH	Input High Current	-	-	1.0	µA
IXOL	XOUT Output Low Current (@0.4V, VDD = 3.3V)	2.0	-	12.0	mA
IXOH	XOUT Output High Current (@2.5V, VDD = 3.3V)	-	-	12.0	mA
VOL	Output Low Voltage	-	-	0.4	V
ICC	Dynamic Supply Current	2.8	-	-	mA
IDD	Static Supply Current	-	4.5	-	mA
VDD	Operating Voltage	-	3.3	-	V
TON	Power up time to Lock (first locked clock cycle after power on)	-	0.18	-	mS
ZOUT	ModOut Clock Driver impedence	-	50.0	-	Ω

AC Electrical Characteristics   (VDD = 3.3V Temp = 25 degrees C)

Symbol	Parameter	Min	Typ	Max	Units
FIN	Input Frequency	10		20	MHz
FOUT	Output Frequency	40		80	MHz
TLH	Time for Output Propagation Lo to Hi (TR) (measured @ 0.8V to 2.0V)	-	0.69	-	ns
THL	Time for Output Propagation Hi to Lo (TF) (measured @ 0.8V to 2.0V)	-	0.68	-	ns
TJC	Jitter (Cycle-to-Cycle)	-200	-	200	ps
TD	Output Duty Cycle	45	50	55	%

Package Dimensions

8-Pin SOIC
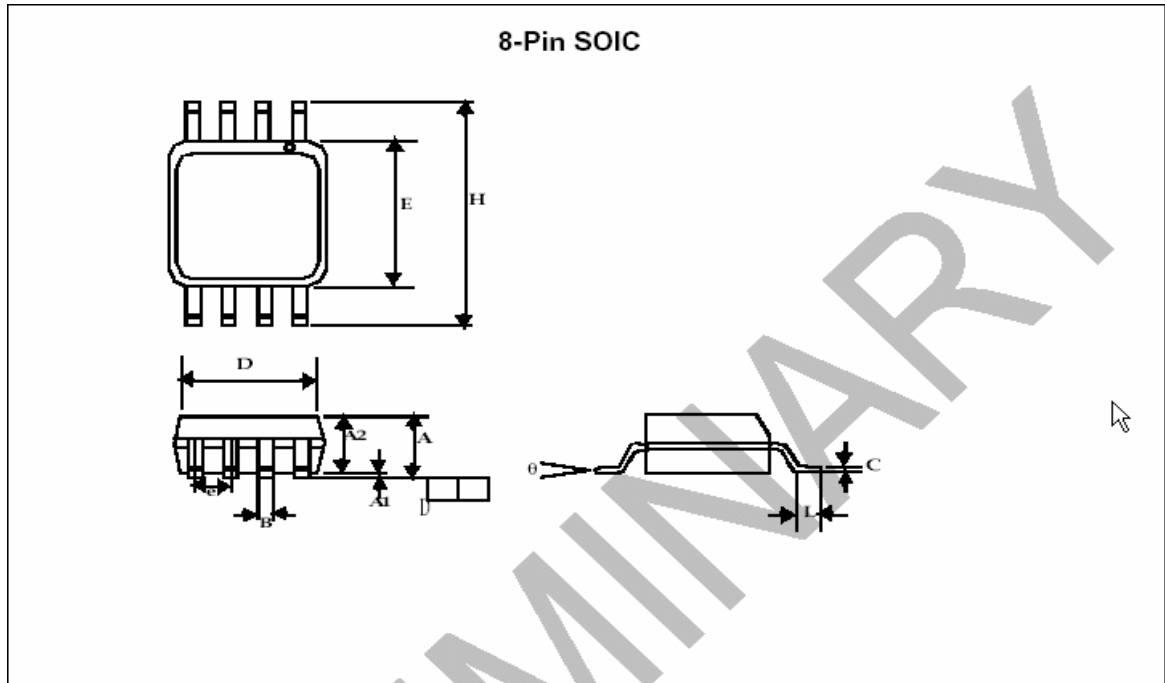
Symbol	Dimensions in inches		Dimensions in millimeters	
	Min	Max	Min	Max
A	0.057	0.071	1.45	1.80
A1	0.004	0.010	0.10	0.25
A2	0.053	0.069	1.35	1.75
B	0.012	0.020	0.31	0.51
C	0.004	0.01	0.10	0.25
D	0.186	0.202	4.72	5.12
E	0.148	0.164	3.75	4.15
E	0.050 BSC		1.27 BSC	
H	0.224	0.248	5.70	6.30
L	0.012	0.028	0.30	0.70
θ	0°	8°	0°	8°

Note: Controlling dimensions are millimeters.
SOIC: 0.074 grams unit weight.

Notice: The information in this document is subject to change without notice.

8-Pin TSSOP
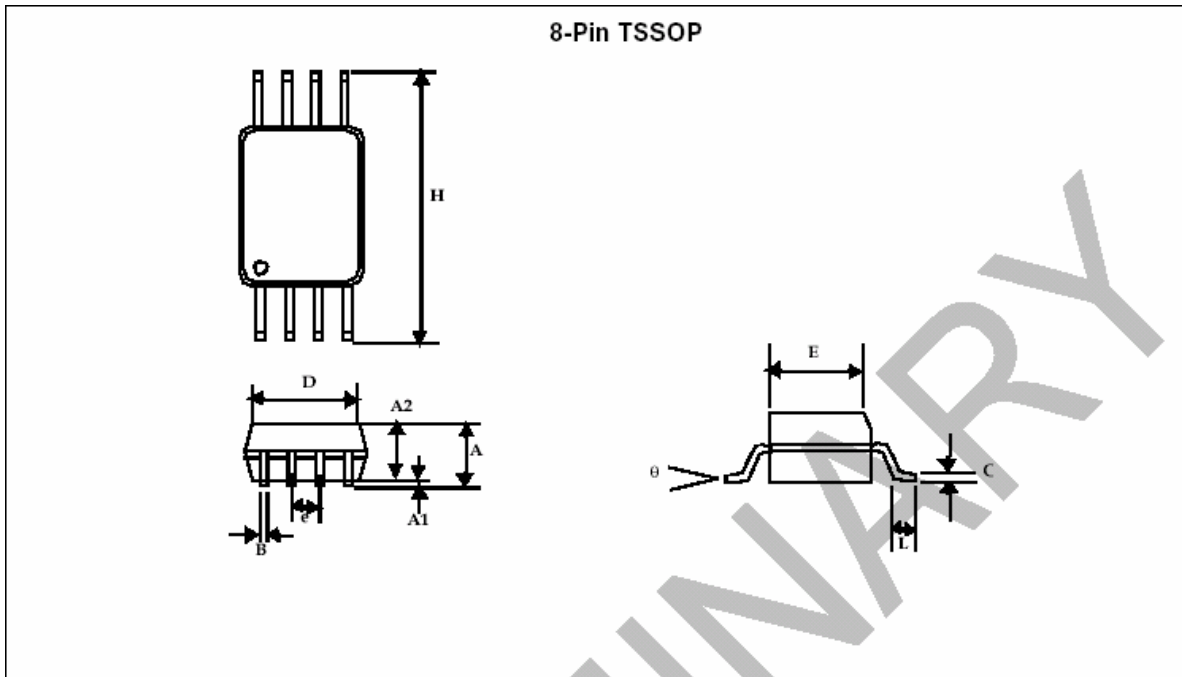
Symbol	Dimensions in inches		Dimensions in millimeters	
	Min	Max	Min	Max
A	0.047			1.10
A1	0.002	0.006	0.05	0.15
A2	0.031	0.041	0.80	1.05
B	0.007	0.012	0.19	0.30
C	0.004	0.008	0.09	0.20
D	0.114	0.122	2.90	3.10
E	0.169	0.177	4.30	4.50
E	0.026 BSC		0.65 BSC	
H	0.244	0.260	6.20	6.60
L	0.018	0.030	0.45	0.75
θ	0°	8°	0°	8°

Note: Controlling dimensions are millimeters.
TSSOP: 0.034 grams unit weight.

Notice: The information in this document is subject to change without notice.

Alliance Semiconductor Corporation
2595, Augustine Drive,
Santa Clara, CA 95054
Tel# 408-855-4900
Fax: 408-855-4999
www.alsc.com

Copyright © Alliance Semiconductor
All Rights Reserved
Preliminary Information
Part Numbers: ASM3P2811A/B
                ASM3P2812A/B
                ASM3P2814A/B
Document Version: v1.0

Notice: The information in this document is subject to change without notice.